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COATING COMPOSITION FOR WALLPAPER AND WALLPAPER MANUFACTURED THEREFROM

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[Abstract]

The subject matter of the present invention relates to a coating composition, the production of wallpaper, and wallpaper manufactured therefrom. The coating composition

contains specific parts by weight (a) of an acrylic acid ester or an acrylic acid ester copolymer with a comonomer content of less than 20 wt%, (b) a styrene-acrylic acid ester copolymer (with a styrene or polystyrene content higher than that in (a)), (c) calcium carbonate, (d) diatomaceous earth, (e) talcum, (f) a titanium dioxide pigment, (g) hollow glass beads and/or hollow plastic bodies and/or hollow plastic microbeads and/or filled hollow plastic bodies with specific particle diameters and specific fibers.

The subject matter of the present invention relates to a coating composition on the basis of aqueous, plasticizer-free plastic dispersions for the production of wallpaper and wallpaper manufactured therefrom, in particular textured wallpaper, which consists of a supporting web made of paper, a plastic sheet, or a nonwoven fabric and a plastic coating disposed along the surface of the supporting web and bonded to said supporting web.

Conventional wallpaper with a textured plastic coating contains a high percentage of polyvinyl chloride (40 to 50%) as well as a high percentage of a plasticizer (≈ 30%). Thus, the German Patent Application [Offenlegungsschrift] 28 08 733, for example, discloses a method for the production of a fabric with a structured surface that is suitable, among other things, for use as a decorative wall cover for walls. As the examples mentioned in this cited document indicate, the main component of the coating material for the supporting web which is a supporting web made of paper is preferably a plasticizer-containing polyvinyl chloride plastisol (59% polyvinyl chloride and 32% plasticizer in Example 1) which, in addition, also contains blowing agents, fillers, and stabilizers. Although this well-known wallpaper or textured wallpaper meets the expectations, in particular with respect to the adhesion to the supporting web, the problem, particularly in the context of the environmental debate, is the high content of polyvinyl chloride and of plasticizers. In the production of textured wallpaper that contains polyvinyl chloride, an industrial postcombustion step must be included. Wallpaper and textured wallpaper containing polyvinyl chloride is, if at all, only very sparingly biodegradable.

According to the information in the description of the German Patent Application [Offenlegungsschrift] 28 08 733, when manufacturing textured wallpaper, polyacrylate and polymethacrylate dispersions instead of the preferably used polyvinyl chloride dispersions can be incorporated into the coating materials. But in practice, it was found that the adhesion, in particular of foamed coating materials made of this plastic, to the supporting web is inferior and, moreover, that it is not possible to paint the dispersions claimed over with a surface coating dispersion if the foamed structures created are based on expandable hollow microbodies.

The problem to be solved by the present invention is to make available a coating composition on the basis of aqueous plastic dispersions for the manufacture of wallpaper, in particular textured wallpaper, which is free from polyvinyl chloride, other halogenated products and plasticizers, which adheres well to the supporting web, which is able to withstand

mechanical stresses that are normally present after drying, and which can be painted over with commercially available dispersion paints. Furthermore, the coating composition should be marked by a high elasticity and resilience, its swelling capacity in water should be low, and, specifically, it should be lightweight. The use of blowing agents should not be necessary. In addition, it should be possible to produce wallpaper coated with the coating composition according to the present invention without postcombustion, and said wallpaper should be biodegradable.

To solve this problem, the coating composition described at the beginning is characterized by the fact that it consists of or contains the following components: (a) 10-50 wt%, preferably 20-30 wt%, of an acrylic acid ester dispersion (calculated as a 50% dispersion), (b) 5-25 wt%, preferably 10-20 wt%, of a styrene-acrylic acid ester copolymer dispersion (calculated as a 50% dispersion), (c) up to 10 wt%, preferably up to 5 wt% of water, (d) 5-15 wt%, preferably 6-10 wt%, of a natural and/or precipitated calcium carbonate, (e) 7-15 wt%, preferably 9-12 wt%, of diatomaceous earth, (f) 5-15 wt%, preferably 8-12 wt%, of ground talcum, (g) 5-10 wt%, preferably 6-8 wt%, of a titanium dioxide pigment, and (h) less than 3 wt%, preferably less than 1 wt%, of an organic solvent, the remainder being made up of processing aids, preservatives, coloring pigments, dyes and/or thickening agents, with the additions contributing to the overall weight of 100 wt%, and (i) 2 to 6 wt%, preferably 3 wt%, relative to the overall weight of the coating, of hollow glass beads and/or hollow plastic bodies with a mean particle diameter of 10 to 150 μm, preferably 15 to 80 μm, and/or hollow plastic microbeads and/or filled hollow plastic bodies. (The amount in wt% specified above in (a) through (i) can also be used in parts by weight.)

According to a special embodiment, the coating composition contains 1 to 3 wt%, preferably 2 wt%, of ligneous fibers and/or manmade fibers.

In the dry or anhydrous state, the coating composition applied to a supporting web thus contains (a) 5 to 25 parts by weight, preferably 10 to 15 parts by weight, of an acrylic acid ester or an acrylic acid ester copolymer with a comonomer content of less than 20 wt%, preferably less than 10 wt%, or a styrene-acrylic acid ester copolymer with a low styrene or polystyrene content, (b) 2.5 to 12.5 parts by weight, preferably 5 to 10 parts by weight, of a styrene-acrylic acid ester copolymer (with a styrene or polystyrene content higher than that in (a)), (c) 5 to 15 parts by weight, preferably 8 to 10 parts by weight, of a natural and/or precipitated calcium carbonate, (d) 7 to 15 parts by weight, preferably 9 to 12 parts by weight, of diatomaceous earth, (e) 5 to 15 parts by weight, preferably 8 to 12 parts by weight, of ground talcum, (f) 5 to 10 parts by weight, preferably 6 to 8 parts by weight, of a titanium dioxide pigment, (g) 2 to 6 parts by weight, preferably 3 parts by weight, relative to the overall weight of the coating, of hollow glass beads and/or hollow plastic beads with a mean particle diameter of 10 to 150 μm, preferably 15

to 80 μm, and/or filled hollow plastic microbeads and/or filled hollow plastic bodies, and 1 to 3 parts by weight of ligneous fibers and/or manmade fibers as well as, optionally, processing aids, preservatives, coloring pigments, dyes and/or thickening agents and, optionally, also residual quantities of water or diluting agents.

Advantageously, the weight of the coating composition applied is 30 to 300 g/cm^3 (dry weight) and/or the density of the coating composition is 0.8 to 1.4 g/cm^3 (relative to the undried coating composition).

According to a preferred embodiment of the coating composition, the acrylic acid ester dispersion (a), in a quantity of 15 to 100 wt% (relative to 100 parts by weight of the acrylic acid ester dispersion) is replaced with the same quantity of an acrylic acid ester copolymer dispersion (calculated as a 50% dispersion) with a comonomer content of less than 20 wt%, preferably less than 10 wt%, preferably with a styrene-acrylic acid ester copolymer dispersion with a low styrene or polystyrene content and/or with an acrylic acid ester copolymer dispersion (a), the minimum film-forming temperature (MFT) is lower by more than 6°C, preferably lower by more than 10°C, than the minimum film-forming temperature of (b).

The present invention also relates to wallpaper, in particular textured wallpaper, which consist of a supporting web made of paper, a plastic sheet, or a nonwoven fabric and a plastic coating disposed along the surface of the supporting web and bonded to said supporting web, with the coating composition (a) containing or consisting of 5 to 25 parts by weight, preferably 10 to 15 parts by weight, of an acrylic acid ester or an acrylic acid ester copolymer with a comonomer content of less than 20 w%, preferably less than 10 wt%, or a styrene-acrylic acid ester copolymer with a low styrene or polystyrene content, (b) 2.5 to 12.5 parts by weight, preferably 5 to 10 parts by weight, of a styrene-acrylic acid ester copolymer (with a styrene or polystyrene content higher than that in (a)), (c) 5 to 15 parts by weight, preferably 6 to 10 parts by weight, of a natural and/or precipitated calcium carbonate, (d) 7 to 15 parts by weight, preferably 9 to 12 parts by weight, of diatomaceous earth, (e) 5 to 15 parts by weight, preferably 8 to 12 parts by weight, of ground talcum, (f) 5 to 10 parts by weight, preferably 6 to 8 parts by weight, of a titanium dioxide pigment, (g) 2 to 6 parts by weight, preferably 3 parts by weight, relative to the total weight of the coating, of hollow glass beads and/or hollow plastic beads with a mean particle diameter of 10 to 150 μm and/or hollow plastic microbeads and/or filled hollow plastic bodies and, optionally, processing aids, preservatives, coloring pigments, dyes and/or thickening agents.

The coating composition according to the present invention can be especially advantageously used in the production of wallpaper with a textured structure by means of a rotary-screen printing, rotogravure printing, squeegee printing, or collotype printing process.

Textured wallpaper that is manufactured by means of the coating composition according to the present invention is free from polyvinyl chloride, plasticizers, aromatic hydrocarbons, toxic heavy metals, chlorinated hydrocarbons, and chlorofluorocarbons. As a result, in the production of this wallpaper, no postcombustion or condensation plants are needed so as to comply with the requirements of TA Luft [Technical Instructions on Air Quality Control]. The textured wallpaper thus produced can be coated with several layers of commercially available dispersion paints. The disposal of old wallpaper is not a problem since only readily biodegradable materials are involved. Given a satisfactory pore distribution and/or an appropriate pore volume, even coating with foamlike structures is very stable.

The present invention also relates to a method for the production of wallpaper or for applying a coating to a supporting web made of paper, a plastic sheet, or a nonwoven fabric, using a coating material which is heated once it has been applied. According to the method of the present invention, a coating composition is used which contains or consists of (a) 10-50 wt%, preferably 20-30 wt%, of an acrylic acid ester or an acrylic acid ester copolymer with a comonomer content of less than 20 wt%, preferably less than 10 wt%, or a styrene-acrylic acid ester copolymer with a low styrene or polystyrene content, (b) 5-25 wt%, preferably 10-20 wt%, of a styrene-acrylic acid ester copolymer dispersion (with a styrene or polystyrene content higher than that in (a)), (c) up to 10 wt%, preferably up to 5 wt% of water, (d) 5 to 15 wt%, preferably 6 to 10 wt%, of a natural and/or precipitated calcium carbonate, (e) 7 to 15 wt%, preferably 9 to 12 wt%, of diatomaceous earth, (f) 5 to 15 wt%, preferably 8 to 12 wt%, of ground talcum, (g) 5 to 10 wt%, preferably 6 to 8 wt%, of a titanium dioxide pigment, (h) less than 3 wt%, preferably less than 1 wt%, of an organic solvent, the remainder being processing aids, preservatives, coloring pigments, dyes and/or thickening agents, with the additions contributing to the overall weight of 100 wt%, and (i) 2 to 6 wt%, preferably 3 wt%, relative to the overall weight of the coating, of hollow glass beads, hollow glass bodies and/or hollow plastic bodies with a mean particle diameter of 10 to 150 μm and/or hollow plastic microbeads and/or filled hollow plastic bodies. The coating material is applied to and/or textured on the supporting web by means of a rotary-screen printing, rotogravure printing, squeegee printing, or collotype printing process, subsequently the coating material is predried at a temperature of 60 to 130°C, preferably at 80 to 125°C, next it is heated to a temperature of 130 to 220°C, preferably to 150 to 205°C, and finally it is cooled.

The synthetic resin dispersions (acrylic acid ester copolymer dispersion and/or acrylic acid ester dispersion) calculated under (a) and (b) for the coating composition are calculated as a 50% dispersion.

The dispersion under (a) and (b) is used as a 35 to 65 wt% dispersion, preferably as a 45 to 52 wt% dispersion. Especially preferred is the use of the dispersions under (a) and (b) as a

50 wt% dispersion. A preferred embodiment provides for the use of an acrylic acid ester copolymer dispersion for (a), preferably with a lower styrene or polystyrene content than that under (b), instead of the acrylic acid ester dispersion.

The substantially known acrylates, such as methyl, ethyl, propyl, butyl, hexyl acrylates or similar acrylates, are used as the acrylic acid ester and/or acrylic acid ester component in the copolymer. Preferably the ester group has 1 to 4 C atoms. Preferred is a butyl acrylate or a styrene-butyl acrylate dispersion, preferably n-butyl acrylate, isobutyl acrylate, or tert-butyl acrylate. Up to 50 wt% (relative to 100 parts by weight of the acrylate), these can preferably be replaced especially with n-butyl methacrylate, isobutyl methacrylate and/or tert-butyl methacrylate. Preferably, however, the acrylates [sic] or styrene-acrylate copolymers are used.

If at all possible, the simultaneous use of vinyl acetates (homo- or copolymer) or vinyl acetate dispersions should be avoided since certain concentrations of these substances can have a detrimental effect on the system.

According to a preferred embodiment, the natural or precipitated calcium carbonate has a mean particle size of less than 20 μm, preferably less than 10 μm. According to one embodiment, the calcium carbonate, up to an amount of 100 wt% (relative to 100 parts by weight of the calcium carbonate used), preferably up to 50 wt%, is replaced with ground dolomites or with microdolomite (replacement with the same amount by weight).

According to one embodiment, the titanium dioxide, up to 100 wt% (relative to 100 parts by weight of the titanium dioxide used), preferably up to 50 wt%, is replaced with other white pigments, preferably zinc oxides, zinc sulfides, or fine precipitated calcium carbonate with a particle size of less than 0.5 μm (replacement with the same amounts by weight).

The diatomaceous earth used must be able to absorb water so that it can be added to the coating material in the low-water, preferably the anhydrous, state.

The ground or fine-particle talcum can be replaced up to 100 wt% (relative to 100 parts by weight of the talcum used), preferably up to 50 wt%, with another highly fine-particle magnesium and/or aluminum silicate with comparable properties and/or with a magnesium hydroxycarbonate (hydrotalcite) and/or with finely ground kaolin or finely ground mica. The direct use of the ground or fine-particle talcum (i.e., without the use or simultaneous use of other silicates), however, is to be especially preferred.

According to a preferred embodiment, the hollow plastic microbodies (filled) and/or the filled hollow plastic bodies have a mean particle size of less than 25 μm, preferably less than 15 μm. According to a preferred embodiment, the unfilled (hollow) plastic hollow bodies or plastic hollow microbodies have a mean particle size of 10 to 150 μm, preferably 15 to 80 μm.

According to a preferred embodiment, the filled hollow microbodies and/or the filled plastic hollow bodies contain a hydrocarbon which is gaseous or still liquid at room temperature,

preferable a saturated hydrocarbon with 3 to 5 carbon atoms, alone or as a component in the mixture with another hydrocarbon or other gas. The hollow plastic bodies or plastic microbodies may contain substantially known hydrocarbons, such as pentane, hexane, heptane, methyl pentane, certain halogenated hydrocarbons or similar substances, as the volatile liquid or the gaseous material; it is, however, to be preferred not to use any halogenated hydrocarbons. The gas or the volatile liquid is selected to ensure that it does not dissolve the thermoplastic material of which the hollow plastic microbodies or hollow plastic bodies are made. The mean particle sizes of these filled hollow plastic bodies or plastic beads are in a range below 20 μm, preferably in a range below 10 μm.

According to a preferred embodiment, the hollow glass bodies are used alone or in a mixture with the filled and/or unfilled hollow plastic microbeads or hollow plastic bodies. The mean diameters of the hollow glass bodies or hollow glass beads can be identical; but preferably, they are larger than the mean diameters of the filled and/or unfilled hollow plastic bodies or hollow plastic microbeads. According to a preferred embodiment, the ratio of the mean diameter of the hollow glass bodies or hollow glass beads and/or unfilled hollow plastic bodies (e.g., only air connection [sic; possibly, air inclusion?]) to the filled hollow plastic bodies and/or hollow plastic microbeads is 1 to lower than 0.8, preferably 1 to lower than 0.5.

Hollow glass bodies are preferably used alone or in a mixture with hollow plastic beads or hollow plastic microbodies (filled or unfilled) since, given the same pore distribution and/or the same pore volume, this embodiment ensures an especially good stability of the coating. The use of hollow glass bodies or glass beads together with filled hollow plastic beads, filled hollow plastic microbodies, or filled hollow plastic bodies is to be especially preferred. This combination makes possible the production of structured wallpaper or coatings with a structure similar to synthetic foam (with specific air voids or a specific void volume) in which the coating has a certain mechanical stability, e.g., a certain scratch resistance, but the coating material contains no chemical blowing agents. The hollow glass beads or hollow glass bodies have a mean diameter of 10 to 150 μm, preferably 15 to 80 μm. If fibers are incorporated into the composition, these provide additional support to the coating material.

According to another embodiment, filled and/or unfilled hollow plastic microbeads or hollow plastic bodies are used. In this case, it is possible to produce an extremely soft coating. Such a coating, however, has the disadvantage that it is more easily susceptible to damage.

According to one embodiment, a mixture of filled and unfilled hollow plastic microbeads or hollow plastic bodies is used.

The ligneous and/or manmade fibers used should not be replaced with asbestos fibers since the latter are too brittle and too rigid. Furthermore, the use of asbestos fibers raises questions of health.

The coating material according to the present invention is specifically designed for the supporting webs described above and cannot be used as a surface coating or painting compound for masonry and other walls. Conversely, surface coatings and painting compounds are not suitable in the context of the supporting webs or the process of the present invention.

Preferably, supporting webs made of paper (or cellulose) are used. According to a preferred embodiment, the supporting webs made of paper used or to be used have a weight per unit area of 70 to 200 g/m^2, preferably 80 to 130 g/m^2.

According to another preferred embodiment, the supporting web consists of a mixture of cellulose with manmade fibers, preferably polyester fibers and/or polyolefin fibers (polyethylene and/or polypropylene fibers), and/or with glass fibers.

It is also possible to use plastic sheets or supporting webs made solely of manmade fibers; this use is, however, not preferred since the water absorbability, the stability of the coating material, and other properties of the coating are specifically designed for use with the supporting webs mentioned above. The supporting webs to be used according to the present invention may or may not have a ground color (primer or undercoat). With the use of the coating material according to the present invention, once said coating material has been applied to these supporting webs, it is possible, even without the use of chemical blowing agents, to produce structured wallpaper or textured wallpaper with the sort of textures known from the PVC foamed wallpaper.

According to a preferred embodiment, the minimum film-forming temperature (MFT) of coating material (a) is lower than 10°C, preferably lower than 8°C, and the MFT of (b) is higher than 10°C, preferably higher than 12°C.

Examples of the coating composition according to the present invention:

Example 1:

Acrylic acid ester dispersion, 50% in H_2O	32 wt%
Styrene-acrylic acid ester dispersion, 50% in H_2O	20 wt%
Water	4.8 wt%
Preservative	0.2 wt%
Retention agent, e.g., propylene glycol	1.00 wt%
Titanium dioxide pigment	8.00 wt%
Calcium carbonate, ground	7.00 wt%
White talcum, ground	12.0 wt%
Spruce fibers	2.00 wt%
Diatomaceous earth, ground	12.0 wt%
Hollow glass microbeads or hollow plastic beads	3.00 wt%
	100. wt%

The coating composition was dispersed in high-speed agitator disk devices. The pressure viscosity of this composition which it was possible to dye in any color was 8000 mPa x s.

For the production of wallpaper with a plastic coating, the surface of which was highly textured, by means of the rotogravure method, this coating composition was applied with a cylinder roller with a relief gravure depth of 0.3 to 1 mm to a supporting material, such as paper or a nonwoven fabric. Drying took place at a temperature of 200°C. The machine speed attainable depends on the length of the drying channel and the discharge of the water vapor. Depending on the design, speeds of 50-100 m/min are possible.

Example 2:

Acrylic acid ester dispersion, 50% in water	32 wt%
Styrene-acrylic acid ester dispersion, 50% in water	20 wt%
Water	7.8 wt%
Preservative	0.2 wt%
Retention agent, e.g., propylene glycol	2.00 wt%
Titanium dioxide pigment	6.00 wt%
Calcium carbonate, ground	8.00 wt%
White talcum, ground	10.0 wt%
Diatomaceous earth, ground	10.0 wt%
Silicic acid, precipitated	1.00 wt%
Hollow glass microbeads or hollow plastic beads	3.00 wt%
	100. wt%

The coating composition was dispersed in high-speed agitator disk devices. The pressure viscosity of this composition which it was possible to dye in any color was 4000 to 6000 mPa x s.

For the production of wallpaper by means of the rotary-screen printing process, the coating composition was applied to a supporting material, such as paper, a nonwoven fabric, or a plastic sheet, by means of steam-treated printing screens to avoid drying during potential downtime periods. Drying took place at a temperature of 200°C. The machine speed attainable depends on the length of the drying channel and the discharge of the water vapor. After an appropriate adjustment, the machine speed reached was 50 m/min.

Example 3:

Acrylic acid ester-styrene copolymer dispersion (with a low styrene or polystyrene content, 50% in water, MFT 0°C (minimum film-forming temperature)	28 wt%
Styrene-acrylic acid ester dispersion (with a styrene or polystyrene content higher than that in (a)), 50% in water, MFT 18°C (minimum film-forming temperature)	24 wt%
Water	7.8 wt%
Preservative	0.2 wt%
Retention agent, e.g., propylene glycol	2 wt%
Titanium dioxide pigment	6 wt%
Calcium carbonate, ground	8 wt%
White talcum, ground	10 wt%
Diatomaceous earth, ground	10 wt%
Silicic acid, precipitated	1 wt%
Hollow glass microbeads with a mean particle diameter of 80 μm and/or hollow plastic beads with a mean particle diameter of 7.5 μm (newly filled); if unfilled, mean particle diameter of 15 μm	3 wt%
	100. wt%

Processing and application as in Example 1.

Example 4:

Acrylic acid ester-styrene copolymer dispersion (with a low styrene or polystyrene content, 50% in water, MFT 0°C (minimum film-forming temperature)	29 wt%
Styrene-acrylic acid ester dispersion (with a styrene or polystyrene content higher than that in (a)), MFT 18°C (minimum film-forming temperature)	23 wt%
Water	7.8 wt%
Preservative	0.2 wt%
Retention agent, e.g., propylene glycol	2 wt%
Titanium dioxide pigment	6 wt%
Calcium carbonate, ground	8 wt%
White talcum, ground	10 wt%
Diatomaceous earth, ground	10 wt%
Silicic acid, precipitated	1 wt%
Mixture of hollow glass microbeads, 20 μm (mean diameter) and filled hollow	3 wt%

plastic bodies, 7.5 μm (mean diameter)	
	100. wt%

Processing and application as in Example 2.

Example 5:

Acrylic acid ester-styrene copolymer dispersion (with a low styrene or polystyrene content, 50% in water, MFT 1°C (minimum film-forming temperature)	29 wt%
Styrene-acrylic acid ester dispersion (with a styrene or polystyrene content higher than that in (a)), 50% in water, MFT 18°C (minimum film-forming temperature)	23 wt%
Water	7.8 wt%
Preservative	0.2 wt%
Retention agent, e.g., propylene glycol	2 wt%
Titanium dioxide pigment	6 wt%
Calcium carbonate, ground	8 wt%
White talcum, ground	11 wt%
Diatomaceous earth, ground	11 wt%
Silicic acid, precipitated	1 wt%
Hollow glass microbeads (mean particle diameter 30 μm) and hollow plastic bodies filled with a hydrocarbon, preferably with 4 carbon atoms (mean particle diameter 7.5 μm)	3 wt%
	100. wt%

Processing and application to paper as a supporting web as in Example 1.

In Examples 3, 4, and 5, the styrene or polystyrene content of (a) was lower by more than 8 wt%, preferably lower by more than 12 wt%, than the styrene or polystyrene content in (b).

Claims

1. A coating composition on the basis of aqueous, plasticizer-free plastic dispersions for the production of wallpaper and wallpaper manufactured therefrom, in particular textured wallpaper, which consists of or contains the following components:

(a) 10-50 wt%, preferably 20-30 wt%, of an acrylic acid ester dispersion (calculated as a 50% dispersion),

(b) 5-25 wt%, preferably 10-20 wt%, of a styrene-acrylic acid ester copolymer dispersion (calculated as a 50% dispersion),

(c) up to 10 wt%, preferably up to 5 wt% of water,

(d) 5-15 wt%, preferably 6-10 wt%, of a natural and/or precipitated calcium carbonate,

(e) 7-15 wt%, preferably 9-12 wt%, of diatomaceous earth,

(f) 5-15 wt%, preferably 8-12 wt%, of ground talcum,

(g) 5-10 wt%, preferably 6-8 wt%, of a titanium dioxide pigment, and

(h) less than 3 wt%, preferably less than 1 wt%, of an organic solvent,

the remainder being made up of processing aids, preservatives, coloring pigments, dyes and/or thickening agents, with the additions contributing to the overall weight of 100 wt%, and

(i) 2 to 6 wt%, preferably 3 wt%, relative to the overall weight of the coating, of hollow glass beads with a mean particle diameter of 10 to 150 μm and/or hollow plastic microbeads and/or filled hollow plastic bodies.

2. The coating composition as claimed in Claim 1, characterized in that the coating composition contains 1 to 3 wt%, preferably 2 wt%, of ligneous fibers and/or manmade fibers.

3. The coating composition as claimed in Claim 1, characterized in that the acrylic acid ester dispersion (a), in a quantity of 15 to 100 wt% (relative to 100 parts by weight of the acrylic acid ester dispersion) is replaced with the same quantity of an acrylic acid ester copolymer dispersion (calculated as a 50% dispersion) with a comonomer content of less than 20 wt%, preferably less than 10 wt%, preferably with a styrene-acrylic acid ester copolymer dispersion with a low styrene or polystyrene content and/or with an acrylic acid ester copolymer dispersion (a), the minimum film-forming temperature (MFT) is lower by more than 6°C, preferably lower by more than 10°C, than the minimum film-forming temperature of (b).

4. The coating composition as claimed in one or more of Claims 1 through 3, characterized in that the weight of the coating composition applied is 30 to 300 g/m^2 (dry weight).

5. The coating composition as claimed in one or more of Claims 1 through 4, characterized in that the density of the coating composition (relative to the undried coating composition) is 0.8 to 1.4 g/cm^3.

and/or that the coating composition contains 2 styrene-acrylic acid ester copolymers (a) and (b), each of which has a different styrene content.

6. Wallpaper, in particular textured wallpaper, which consists of a supporting web made of paper, a plastic sheet, or a nonwoven material and a plastic coating disposed along the surface of the supporting web and bonded to said supporting, characterized in that the coating composition contains or consists of

(a) 5 to 25 parts by weight, preferably 10 to 15 parts by weight, of an acrylic acid ester or an acrylic acid ester copolymer with a comonomer content of less than 20 w%, preferably less than 10 wt%, or a styrene-acrylic acid copolymer with a low styrene or polystyrene content,

(b) 2.5 to 12.5 parts by weight, preferably 5 to 10 parts by weight, of a styrene-acrylic acid ester copolymer (with a styrene or polystyrene content higher than that in (a)),

(c) 5 to 15 parts by weight, preferably 6 to 10 parts by weight, of a natural and/or precipitated calcium carbonate,

(d) 7 to 15 parts by weight, preferably 9 to 12 parts by weight, of diatomaceous earth,

(e) 5 to 15 parts by weight, preferably 8 to 12 parts by weight, of ground talcum,

(f) 5 to 10 parts by weight, preferably 6 to 8 parts by weight, of a titanium dioxide pigment,

(g) 2 to 6 parts by weight, preferably 3 parts by weight, relative to the total weight of the coating, of hollow glass beads and/or hollow plastic beads with a mean particle diameter of 10 to 150 μm and/or hollow plastic microbeads and/or filled hollow plastic bodies and, optionally, processing aids, preservatives, coloring pigments, dyes and/or thickening agents.

7. The wallpaper as claimed in Claim 6, characterized in that the coating composition contains

1 to 3 parts by weight, preferably 2 parts by weight, of ligneous fibers and/or manmade fibers.

8. The wallpaper as claimed in Claims 6 and 7, characterized in that the amount by weight of the coating composition disposed along the supporting web is 30 to 300 g/m^2 (dry weight).

9. A method for the production of wallpaper or for applying a coating on a supporting web made of paper, a plastic sheet, or a nonwoven fabric, using a coating material which, after application, is heated, characterized in that a coating composition is used which contains or consists of

(a) 10-50 wt%, preferably 20-30 wt%, of an acrylic acid ester or an acrylic acid ester copolymer with a comonomer content of less than 20 wt%, preferably less than 10 wt%, or a styrene-acrylic acid ester copolymer with a low styrene or polystyrene content,

(b) 5 to 25 wt%, preferably 10 to 20 wt%, of a styrene-acrylic acid ester copolymer (with a styrene or polystyrene content higher than that in (a)),

(c) up to 10 wt%, preferably up to 5 wt%, of water

(d) 5 to 15 wt%, preferably 6 to 10 wt%, of a natural and/or precipitated calcium carbonate,

(e) 7 to 15 wt%, preferably 9 to 12 wt%, of diatomaceous earth,

(f) 5 to 15 wt%, preferably 8 to 12 wt%, of a ground talcum,

(g) 5 to 10 wt%, preferably 6 to 8 wt%, of a titanium dioxide pigment,

(h) less than 3 wt%, preferably less than 1 wt%, of an organic solvent, the remainder being made up of processing aids, preservatives, coloring pigments, dyes and/or thickening agents, with the additions contributing to the overall weight of 100 wt%, and

(i) 2 to 6 wt%, preferably 3 wt%, relative to the overall weight of the coating, of hollow glass beads, hollow glass bodies and/or hollow plastic bodies with a mean particle diameter of 10 to 150 μm and/or hollow plastic microbeads and/or filled hollow plastic bodies,

that the coating material is applied t and textured on the supporting web using a rotary-screen printing, rotogravure printing, squeegee printing, or collotype printing process,

that the coating material is predried at a temperature of 60 to 130°C, preferably 80 to 125°C,

and is subsequently heated to a temperature of 130 to 220°C, preferably 150 to 205°C,

and that it is subsequently cooled.

10. The use of the coating composition as claimed in one or more of Claims 1 through 5 in the production of wallpaper by means of the rotary-screen printing or rotogravure printing process with a plastic coating, the surface of which is highly textured.

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COATING COMPOSITION FOR WALLPAPER AND WALLPAPER MANUFACTURED THEREFROM

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[Abstract]

The subject matter of the present invention relates to a coating composition, the production of wallpaper, and wallpaper manufactured therefrom. The coating composition contains specific parts by weight (a) of an acrylic acid ester or an acrylic acid ester copolymer with a comonomer content of less than 20 wt%, (b) a styrene-acrylic acid ester copolymer (with a styrene or polystyrene content higher than that in (a)), (c) calcium carbonate, (d) diatomaceous earth, (e) talcum, (f) a titanium dioxide pigment, (g) hollow glass beads and/or hollow plastic bodies and/or hollow plastic microbeads and/or filled hollow [sic] plastic bodies with specific particle diameters and specific fibers.

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EUROPEAN SEARCH REPORT

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.[5])
A	US-A-4 782 109 (DULANEY ET AL) * Example 8 * ---	1	C09D125/14 C09D133/06 D21H5/00 B41M3/18
A	DE-B-2 614 190 (MARBURGER TAPETENFABRIK J. B. SCHAEFER KG) * Claims 1-3 * -----	1	

TECHNICAL FIELDS SEARCHED (Int. Cl.[5])
C09D

The present search report has been drawn up for all claims.

Place of search	Date of completion of the search	Examiner
The Hague	December 8, 1992	Dieter Schüler

CATEGORY OF CITED DOCUMENTS

X: Particularly relevant if taken alone.
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T: Theory or principle underlying the invention.
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